--1. ~~(Once amended) A~~ communication system comprising:

a digital [means] input circuit for generating a plurality of digital input signals;

a signature [means] circuit for generating a plurality of signature signals each signature signal being generated in response to [each] one of the plurality of digital input signals generated [with] by said digital [means] input circuit, where each of the plurality of signature signals has a signature that is different from the signature of each of the other signature signals;

a multiplexing [means] circuit for generating a multiplexed signature signal by combining the signature signals generated [with] by said signature [means] circuit;

[transmitting means] a transmitter for transmitting the multiplexed signature signal generated [with] by said multiplexing [means] circuit to a remote location;

[receiving means] a receiver located at the remote location for receiving the multiplexed signature signal transmitted [with] by said [transmitting means] transmitter; and

a demultiplexing [means] circuit for generating a plurality of digital output signals each digital output signal corresponding to a different one of the plurality of digital input signals generated [with] by said digital [means] input circuit.

--2. (Once amended) ~~The system as set forth in claim 1~~ above, wherein said system provides for communication of digital signals to the remote location; wherein said digital [means] input circuit includes [means] a circuit for generating the plurality of digital signals to be communicated to the remote location; and wherein said signature [means] circuit includes [means] a circuit for generating the signature signal in response to each of the plurality of digital signals generated [with] by said digital [means] digital input circuit by modulating the digital signals with a signature signal for communication to the remote location.

--3. (Once amended) The system as set forth in claim 1 above, wherein said system provides for location of said [transmitting means] transmitter; said system further comprising [means] a location processor for processing the digital signals generated [with] by said demultiplexing [means] circuit to determine the location of said [transmitting means] transmitter.

--4. (Once amended) The system as set forth in claim 1 above, wherein said system provides for location of said [receiving means] receiver; said system further comprising [means] a location processor for processing the digital signals generated [with] by said demultiplexing [means] circuit to ~~determine~~ the location of said [receiving means] receiver.

[--5. (Once amended) A filter processor [The] system [as set forth in claim 1 above, wherein said digital means includes] comprising:

an analog input device for generating an analog input signal;

an analog to digital converter for generating digital signal samples in response to the analog input signal generated by said analog input device; and

an integrated circuit stored program digital computer for generating [the plurality of digital signals in response to processing of digital information] an output signal under control of a stored program, said integrated circuit stored program digital computer including

a) an integrated circuit read only memory for storing a computer program,

b) integrated circuit input logic for inputting the digital signal samples generated by said analog to digital converter under control of the computer program stored in said integrated circuit read only memory,

b) an integrated circuit random access memory for storing digital signal samples,

c) integrated circuit writing logic for writing the digital signal samples input by said integrated circuit input circuit to said integrated circuit random access memory,

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d) integrated circuit ~~accessing logic~~ for accessing digital signal samples from said integrated circuit random access memory under control of the computer program stored by said integrated circuit read only memory,

e) integrated circuit processing logic for filter processing the digital signal samples accessed from said integrated circuit random access memory by said accessing circuit under control of the computer program stored by said integrated circuit read only memory, and

c) integrated circuit output logic for generating an output signal in response to the processing of the digital signal samples by said integrated circuit processing logic under control of the computer program stored by said integrated circuit read only memory.

[--6. (Once amended) The system as set forth in claim 1 above, wherein said signature [means] circuit includes a plurality of signature generators each generating a signature different from the signatures of the other signature generators in response to the plurality of digital signals generated [with] by said digital ~~[means]~~ digital input circuit.

--7. (Once amended) ~~The system as set forth in claim 1~~ above, wherein said [multiplexing means] multiplexing circuit includes [means] a circuit for generating the multiplexed signature signal by combining the signature signals generated [with] ~~by~~ said signature [means] circuit with wired circuit ~~connections.~~

[--3. ~~(Once amended) A~~ A communication [The] system [as set forth in claim 1 above, wherein said transmitting means includes a radio transmitter for transmitting] comprising:

an antenna for receiving a signature signal;

an amplifier circuit for amplifying the [multiplexed] signature signal [generated with] received by said [multiplexing means to the remote location as radio signals] antenna;

a single bit digital sampling circuit for generating single bit digital input signature signal samples by sampling the input signature signal amplified by said amplifier circuit;

an input memory for storing the single bit digital input signature signal samples generated by said single bit digital sampling circuit;

a plurality of single bit digital correlators, wherein each of said single bit digital correlators includes

a) a digital reference memory for storing digital reference signature signal samples having a signature that is different from the signatures of the digital reference signature samples stored by the digital reference memories in each of the other digital correlators,

b) a single bit correlator circuit for generating multiple bit digital correlated output signal samples by correlation filtering of the single bit digital input signature signal samples stored by said input memory in ~~response to the digital reference~~

~~signature signal samples~~ stored by said digital reference memory, and

c) an output memory for storing the multiple bit digital correlated output signal samples generated by said correlator circuit;

an integrated circuit stored program computer for generating an output signal under control of a stored program, said integrated circuit stored program computer including

a) an integrated circuit read only memory for storing a computer program,

b) integrated circuit processing logic for processing the digital correlated output signal samples stored by said output memory in each of said single bit digital correlators under control of the computer program stored by said integrated circuit read only memory, and

c) integrated circuit output logic for generating an output display signal in response to the processing of the digital correlated output signal samples by said integrated circuit processing logic under control of the computer program stored by said integrated circuit read only memory; and

an operator display for displaying information to an operator in response to the output display signal generated by said computer output circuit.

#1 B cont.

--9. (Once amended) The system as set forth in claim 1 above, wherein said [transmitting means] transmitter includes a seismic transmitter for transmitting the multiplexed signature signal generated [with] by said multiplexing circuit to the remote location as seismic signals.

--10. (Once amended) The system as set forth in claim 1 above, wherein said [transmitting means] transmitter includes an underwater acoustic transmitter for transmitting the multiplexed signature signal generated [with] by said multiplexing [means] circuit to the remote location as underwater acoustic signals.

#1 B cont.

--11. (Once amended) ~~A communication~~ [The] system [as set forth in claim 1 above, wherein said] for receiving a plurality of input signature signals each transmitted from a different remote location and each input signature signal having a signature that is different from the signature of each of the other input signature signals, said communication system comprising:

an antenna for receiving the plurality of input signature signals each having a signature that is different from the signature of each of the other input signature signals transmitted from the different remote locations;

an amplifier circuit for amplifying the plurality of input signature signals received by said antenna;

a digital sampling circuit for generating digital input signature signal samples by sampling the signature signals amplified by said amplifier circuit;

an input memory for storing the digital input signature signal samples generated by said digital sampling circuit;

[demultiplexing means includes] a plurality of digital correlators, wherein each of said digital correlators includes

a) a digital reference memory for storing digital reference signature signal samples having a signature that is different from the signatures of the digital reference signature samples stored by the digital reference memories in each of the other digital correlators,

~~b)~~ a ~~correlator circuit [each]~~ for generating [a different one of the plurality of] digital [signals and each corresponding to a different one of] correlated output signal samples by correlation filtering of the [plurality of] digital [signals] input signature signal samples stored by [generated with] said [digital means] input memory in response to the digital reference signature signal samples stored by said digital reference memory, and

c) an output memory for storing the digital correlated output signal samples generated by said correlator circuit;

an integrated circuit stored program computer for generating an output signal under control of a stored program, said integrated circuit stored program computer including

a) an integrated circuit read only memory for storing a computer program,

b) integrated circuit processing logic for processing the digital correlated output signal samples stored by said output memory in each of said digital correlators under control of the computer program stored by ~~said~~ integrated ~~circuit~~ read only memory, and

c) integrated circuit output logic for generating an output display signal in response to the processing of the digital correlated output signal samples by said integrated circuit processing logic under control of the computer program stored by said integrated circuit read only memory; and

an operator display for displaying information to an operator in response to the output display signal generated by said computer output circuit.

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12. ~~(Once amended) A communication [The] system [as set~~ forth in claim 1 above, wherein said] comprising:

an antenna for receiving a signature signal;

an amplifier circuit for amplifying the signature signal received by said antenna;

a single bit digital sampling circuit for generating single bit digital input signature signal samples by sampling the input signature signal amplified by said amplifier circuit;

an input memory for storing the single bit digital input signature signal samples generated by said single bit digital sampling circuit; and

a plurality of single bit digital correlators, wherein each of said single bit digital correlators includes

a) a single bit digital reference memory for storing single bit digital reference signature signal samples having a signature that is different from the signatures of the single bit digital reference signature samples stored by the single bit digital reference memories in each of the other single bit digital correlators,

b) a single bit digital [means includes means] correlator circuit for generating [each of the plurality] multiple bit digital correlated output signal samples by correlation filtering of the single bit digital [signals as serial combinations of digital bits] ~~input signature signal~~ samples

stored by said input memory in response to the single bit digital reference signature signal samples stored by said single bit digital reference memory, and

c) an output memory for storing the multiple bit digital correlated output signal samples generated by said single bit digital correlator circuit.

--13. ~~(Once amended) A communication system comprising:~~

a plurality of signature sources each for transmitting a signature signal to a receiver that is located at a remote location, wherein each of said signature sources includes

a) a signature [generators each] generator for generating a signature signal [, where each of the signature signals has] having a signature that is different from the signature of each of the other signature signals [;] generated by the each of the other signature generators included in each of the other plurality of signature sources and

b) a [plurality of transmittors each connected to a different one of said plurality of signature generators] transmitter for transmitting the signature signal generated [with] by the signature generator [to which it is connected] to a receiver that is located at a remote location;

a [receivor] receiver located at the remote location for receiving the signature signals transmitted [with] by the transmitters included in said plurality of [transmittors] signature sources; and

[demultiplexing means] a demultiplexor for generating a plurality of output signals each corresponding to a different one of the [plurality of] signature signals generated [with] by said ~~plurality of signature~~ [generators] ~~sources~~.

--15. ~~(Once amended)~~ ~~The system as set forth in claim 13~~ above, wherein said system provides for location of said plurality of [transmittors] transmitters; said system further comprising [means] a location processor for processing the plurality of output signals generated [with] by said [demultiplexing means] demultiplexor to determine the location of a least one of said [transmittors] transmitters.

--16. (Once amended) The system as set forth in claim 13 above, wherein said system provides for location of said [receivor] receiver; said system further comprising [means] a location processor for processing the plurality of output signals generated [with] by said [demultiplexing means] demultiplexor to determine the location of said [receivor] receiver.

--17. (Once amended) The system as set forth in claim 13 above, wherein each of said plurality of [transmittors] transmitters includes a radio transmitter for transmitting the signature signal generated [with] by the signature generator to which it is connected to the remote location as a radio signal.

--18. (Once amended) The system as set forth in claim 13 above, wherein each of said plurality of [transmittors] transmitters includes a seismic transmitter for transmitting the signature signal generated [with] by the signature generator to ~~which it is connected to the remote~~ location as a seismic signal.

--19. ~~(Once amended) The system as set forth in claim 13~~ above, wherein each of said plurality of ~~[transmittors]~~ transmitters includes an acoustic ~~transmitter~~ for transmitting the signature signal ~~generated~~ [with] by the signature generator to which ~~it~~ is connected to the remote location as an acoustic ~~signal.~~

20. ~~(Once amended)~~ A communication [The] system [as set forth in claim 13 above, wherein said] for receiving a plurality of input signature signals each transmitted from a different remote location and each input signature signal having a signature that is different from the signature of each of the other input signature signals, said communication system comprising:

an antenna for receiving the plurality of input signature signals each having a signature that is different from the signature of each of the other input signature signals transmitted from the different remote locations;

an amplifier circuit for amplifying the plurality of input signature signals received by said antenna;

a digital sampling circuit for generating digital input signature signal samples by sampling the plurality of input signature signals amplified by said amplifier circuit;

an input memory for storing the digital input signature signal samples generated by said digital sampling circuit;

[demultiplexing means includes] a plurality of digital correlators, wherein each of said digital correlators includes

a) a digital reference memory for storing digital reference signature signal samples having a signature that is different from the signatures of the digital reference signature samples stored by the digital reference memories in each of the other digital correlators,

b) a correlator circuit [each] for generating [a different one of the plurality of] [output signals and each corresponding to a different one of the plurality of] digital correlated output signal samples by correlation filtering of the digital [signature signals] input signature signal samples stored by [generated with] said [plurality of signature generators] input memory in response to the digital reference signature signal samples stored by said digital reference memory, and

c) an output memory for storing the digital correlated output signal samples generated by said correlator circuit;

an integrated circuit stored program computer for generating an output signal under control of a stored program, said integrated circuit stored program computer including

a) an integrated circuit read only memory for storing a computer program,

b) an integrated circuit processing circuit for processing the digital correlated output signal samples stored by said output memory in each of said digital correlators under control of the computer program stored by said integrated circuit read only memory, and

c) an integrated circuit output circuit for generating an output display signal in response to the processing of the digital

correlated output signal samples by said integrated circuit processing circuit under control of the computer program stored by said integrated circuit read only memory; and

an operator display for displaying information to an operator in response to the output display signal generated by said computer output circuit.

21. (Once amended) A communication system comprising:

a digital processor for generating a plurality of digital signals;

a signature generator for generating a signature signal in response to each of the plurality of digital signals generated [with] by said digital processor, where each of the signature signals has a signature that is different from the signature of each of the other signature signals;

a multiplexor for generating a multiplexed signature signal by combining the signature signals generated [with] by said signature generator;

a [transmittor] transmitter for transmitting the multiplexed signature signal generated [with] by said multiplexor to a remote location;

a receiver located at the remote location for receiving the multiplexed signature signal transmitted [with] by said [transmittor] transmitter; and

a demultiplexor for generating a plurality of digital signals each corresponding to a different one of the plurality of digital signals generated [with] by said digital processor.

22. (~~Once amended) The system as set forth in claim 21~~ above, wherein said system provides for communication of digital signals to the remote location; wherein said digital processor includes [means] a location processor for generating the plurality of digital signals to be communicated to the remote location; and wherein said signature generator includes [means] a signature circuit for generating the signature signal in response to each of the plurality of digital signals generated [with] by said digital [means] processor by modulating the digital signals with a signature signal for communication to the remote location.

23. (Once amended) The system as set forth in claim 21 above, wherein said system provides for location of said [transmittor] transmitter; said system further comprising [means] an output processor for processing the digital signals generated [with] by said demultiplexor to determine the location of said [transmittor] transmitter.

24. (Once amended) The system as set forth in claim 21 above, wherein said system provides for location of said receiver; said system further comprising [means] a location processor for processing the digital signals generated [with] by ~~said demultiplexor to determine the location of said receiver.~~

~~26. (Once amended) The system as set forth in claim 21~~ above, wherein said signature generator includes a plurality of signature generators each generating a signature different from the signatures of the other signature generators in response to the plurality of digital signals generated [with] by said digital processor.

27. (Once amended) The system as set forth in claim 21 above, wherein said multiplexor includes means for generating the multiplexed signature signal by combining the signature signals generated [with] by said signature generator with wired circuit connections.

28. (Once amended) The system as set forth in claim 21 above, wherein said [transmittor] transmitter includes a radio transmitter for transmitting the multiplexed signature signal generated [with] by said [multiplexing means] multiplexor to the remote location as radio signals.

29. (Once amended) The system as set forth in claim 21 above, wherein said [transmittor] transmitter includes a seismic transmitter for transmitting the multiplexed signature signal generated [with] by said multiplexor to the remote location as seismic signals.

30. ~~(Once amended)~~ The system as ~~set forth in claim 21~~ above, wherein said [transmittor] transmitter includes an underwater acoustic transmitter for transmitting the multiplexed signature signal generated [with] by said multiplexor to the remote location as underwater acoustic signals.

31. (Once amended) The system as set forth in claim 21 above, wherein said demultiplexor includes a plurality of digital correlators each for generating a different one of the plurality of digital signals and each corresponding to a different one of the plurality of digital signals generated [with] by said digital processor.

32. ~~(Once amended) A communication [The] system [as set forth in claim 21 above, wherein said]~~ comprising:

an antenna for receiving a signature signal;

an amplifier circuit for amplifying the signature signal received by said antenna;

a digital sampling circuit for generating digital input signature signal samples by sampling the input signature signal amplified by said amplifier circuit;

an input memory for storing the digital input signature signal samples generated by said digital sampling circuit;

a plurality of digital correlators, wherein each of said digital correlators includes

a) a digital reference memory for storing digital reference signature signal samples having a signature that is different from the signatures of the digital reference signature samples stored by the digital reference memories in each of the other digital correlators,

b) a digital [processor includes means] correlator circuit for generating [each of the plurality of] digital [signals as serial combinations] correlated output signal samples by correlation filtering of the digital [bits] input signature signal samples stored by said input memory in response to the digital reference signature signal samples ~~stored by said digital reference~~

memory, said digital correlator circuit including a multiplier circuit for generating product signal samples by multiplying the input signature signal samples stored by said input memory with digital reference signature signal samples stored by said digital reference memory and an adder circuit for generating each of the digital correlated output signal samples by adding together product signal samples generated by said multiplier circuit, and

c) an output memory for storing the digital correlated output signal samples generated by said digital correlator circuit;

an integrated circuit stored program computer for generating an output signal under control of a stored program, said integrated circuit stored program computer including

a) an integrated circuit read only memory for storing a computer program,

b) integrated circuit processing logic for processing the digital correlated output signal samples stored by said output memory in each of said digital correlators under control of the computer program stored by said integrated circuit read only memory, and

c) integrated circuit output logic for generating an output display signal in

~~response to the processing~~ of the digital correlated output signal samples by said integrated circuit processing logic under control of the computer program stored by said integrated circuit read only memory; and

an operator display for displaying information to an operator in response to the output display signal generated by said computer output circuit.

--33. (Once amended) A communication system comprising:

a plurality of signature generators each for generating a signature signal, where each of the signature signals has a signature that is different from the signature of each of the other signature signals and where [all of] the signature signals generated by said plurality of signature generators overlap therebetween;

a plurality of [transmittors] transmitters each connected to a different one of said plurality of signature generators for transmitting the signature signal generated [with] by the signature generator to which it is connected to a remote location;

a [receivor] receiver located at the remote location for receiving the overlapping signature signals transmitted [with] by said plurality of [transmittors] transmitters; and

a demultiplexor for generating a plurality of output signals each corresponding to a different one of the plurality of overlapping signature signals generated [with] by said plurality of ~~signature generators~~.

35. (Once amended) ~~The system as set forth in claim 33~~ above, wherein said system provides for location of said plurality of [transmittors] transmitters; said system further comprising [means] a processor for processing the plurality of output signals generated [with] by said demultiplexor to determine the location of a least one of said [transmittors] transmitters.

36. (Once amended) The system as set forth in claim 33 above, wherein said system provides for location of said [receivor] receiver; said system further comprising [means] a processor for processing the plurality of output signals generated [with] by said demultiplexor to determine the location of said receivor.

37. (Once amended) The system as set forth in claim 33 above, wherein each of said plurality of [transmittors] transmitters includes a radio transmitter for transmitting the signature signal generated [with] by the signature generator to which it is connected to the remote location as a radio signal.

38. (Once amended) The system as set forth in claim 33 above, wherein each of said plurality of [transmittors] transmitters includes a seismic transmitter for transmitting the signature signal generated [with] by the signature generator to which it is connected to the remote location as a seismic signal.

39. ~~(Once amended) The system as set forth in claim 33~~ above, wherein each of said plurality of [transmittors] transmitters includes an acoustic transmitter for transmitting the signature signal generated [with] by the signature generator to which it is connected to the remote location as an acoustic signal.

40. (Once amended) The system as set forth in claim 33 above, wherein said demultiplexor includes a plurality of digital correlators each for generating a different one of the plurality of output signals and each corresponding to a different one of the plurality of signature signals generated [with] by said ~~plurality of signature generators.~~